

RAND

*Looking to the Future:
Health Professions
Education in Texas*

Richard Rettig

DRU-2307-1-CAE

September 2000

Prepared for the Texas Higher Education Coordinating Board

DISTRIBUTION STATEMENT A
Approved for Public Release
Distribution Unlimited

Council for Aid to Education

The RAND unrestricted draft series is intended to transmit preliminary results of RAND research. Unrestricted drafts have not been formally reviewed or edited. The views and conclusions expressed are tentative.

20001023 010

*RAND is a nonprofit institution that helps improve policy and decisionmaking through research and analysis.
RAND's publications and drafts do not necessarily reflect the opinions or policies of its research sponsors.*

DTIC QUALITY INSPECTED 4

PREFACE

Like all institutions of higher learning in the U.S., the Texas higher education system faces many challenges. Some challenges are similar to those faced by similar institutions all over the country; some are unique to Texas. With this in mind, the Texas Higher Education Coordinating Board commissioned RAND to identify the important issues that the Texas higher education system--and thus the Coordinating Board--will face in the next five to ten years. This report focuses on one portion of the RAND research--issues related to the education of physicians, nurses, and allied health professionals. This research is part of a larger body of research on the challenges that face higher education across the United States, conducted by the Council for Aid to Education, an independent subsidiary of RAND.

Concurrent with awarding RAND this study, the Texas Higher Education Coordinating Board also convened a Planning Committee to assist it in developing a statewide plan. In turn, the Planning Committee established a Task Force on Health Professions Education. The RAND study and the efforts of the Task Force, although contractually separate, were conducted at the same time and informally coordinated. This report reflects only the independent analysis and judgment of RAND researchers.

Further information on the Council for Aid to Education can be obtained at:

Council for Aid to Education
342 Madison Avenue, Suite 1532
New York, NY 10173
Telephone: (212) 661-5800
Fax: (212) 661-9766
www.cae.org

CONTENTS

PREFACE	iii
1. INTRODUCTION	
The Issues	1
RAND's Approach	3
Organization of the Report	4
2. THE NEED FOR BETTER DATA	6
3. PHYSICIANS	
The Supply of Physicians	7
Distribution of Physicians	9
The Medical Schools Respond	13
4. NURSES	
The Nursing Shortage in the United States	17
What is the Situation in Texas?	19
5. ALLIED HEALTH PROFESSIONALS	
Defining the Allied Health Professions	22
Changes in the Allied Health Professions	24
No Central Authority for Education and Regulation	24
Degree Creep	27
Transferring From One School to Another	27
6. IMPLICATIONS FOR THE TEXAS HIGHER EDUCATION COORDINATING BOARD	
Develop a System for Gathering Pertinent Data	29
Do Not Build a New Four-year Medical School at This Time	30
Address the Nursing Shortage	31
Define the Allied Health Professions and Reform the Regulatory System	33
Optimize the Coordinating Board's Ability to Focus on the Issues	34

APPENDIX

ALLIED HEALTH PROFESSIONS EDUCATION: A PRIMER

Definitions	36
General	37
The Drivers of Change in Allied Health	38
Allied Health Education	39
Allied Health Faculty and Research Needs	41
The Allied Health "Regulatory" World	41
The Allied Health Marketplace	43
Health Care Professions Error Management & Quality Improvement	43
Health Policy Needs	46

1. INTRODUCTION

The Issues

Many of the issues faced by Texas schools as they plan for the future are really broad health care issues faced by the state and even the country as a whole: do we have enough doctors, nurses, and other health care professionals? What do the numbers look like for the future? How are these professionals distributed in terms of primary vs. specialty care, geography, and relative to the patient population? How can underserved populations be better served?

The broad scope of RAND's assignment—identifying for the Texas Higher Education Coordinating Board important issues in health professions education—was made more complicated by the fact that issues arise in three intersecting areas:

- The *health care system*, which is undergoing rapid and profound change in all dimensions, including finance and cost containment, quality assurance, and access to care, especially for uninsured and underinsured populations.
- The *health professions education system*, which is very complicated in its own right, embracing associate, baccalaureate, and post-baccalaureate degree programs as well as two-year, four-year, and graduate institutions. Health education is also seeking to respond to tumultuous change in the market for health care services, while at the same time seeking stability and integrity in the fulfillment of its teaching, research, and patient care missions.
- *Changes in Texas* that are independent of health services and health education. These include a population that is growing rapidly and changing demographically, anticipated economic

growth, and development of high-tech industry concomitant with high unemployment and poverty, the dynamic interaction of Texas and Mexico in the border areas, and eventual shifts in political representation and power.

Medical schools in Texas are either public or publicly supported, so they must respond more directly to the health needs of the state and its citizens than is true for private institutions. They don't produce doctors independent of the state's ability to absorb a certain number of new doctors, for example. Nor do they lightly turn away medical school applicants if the state needs more health care providers.

But they can only assume some responsibility for addressing these questions and solving the larger problems. For example, the schools can exert only some influence on their students about what specialty they choose or where they choose to practice after graduation. Where do their responsibilities start and stop? What other agencies are there to fill the gaps and how should responsibility be shared?

The responsibility for managing changes in health care and health education is not clearly assigned to a single, accountable agency, either at the national level or in Texas. Rather, responsibility is distributed--or fragmented--among many parties, public and private, state and federal. Complications arise in this fragmented environment because some, but not all, health care system issues are educational, and some, but not all, health education issues will come to the Texas Higher Education Coordinating Board. Moreover, some Texas issues may appear to be health education issues but are actually health care system issues, especially related to access.

It was not within the scope of the study to answer all of these questions, but the study did at least clarify the issues. And the study did address the logical last question, what implications do the issues have for the Texas Higher Education Coordinating Board?

RAND's Approach

Because of the broad scope of the assignment, and the time and resource constraints of the contract, RAND needed to be highly selective in its determination of which issues were the most important to explore, and as efficient as possible in its methodology. One way RAND achieved this was to work closely with the Coordinating Board's Task Force on Health Professions Education. This meant coordinating our efforts and taking advantage of the Task Force's work, while guarding the independence of our findings and of the final RAND report.

RAND began with visits to Austin in November 1999 and January 2000. In February 2000 we attended a meeting of the Planning Committee's Task Force on Health Professions Education. Four issues were defined at the meeting that helped to shape RAND's approach. They are participation; success; technology,¹ and workforce. Workforce is the area with the most significant policy questions because they have significant implications for the Texas Higher Education Coordinating Board and this became one of the issues RAND explored most thoroughly for this report. All four issues are described below.

Participation, which might also be described as access of minority students to undergraduate medical education, is being addressed by the medical schools through various outreach programs.

Success, which pertains to the graduation rates of those admitted to medical and dental schools in the state, appears to be satisfactory.

Technology refers to the use of telecommunications for meeting health care needs, primarily in underserved rural areas, and includes the financing of line charges and reimbursement of medical and health services, continuing medical education, and the special needs of caring for burn, trauma, and critical care patients. Technology is receiving careful and continuous attention for its current benefits, potential applications, and associated costs in medical education.

¹ Texas Higher Education Coordinating Board, Planning Committee, Task Force on Health Professions Education, *Recommendations from the Subcommittee on Medicine and Dentistry*, February 3, 2000.

Workforce, includes the adequacy of the supply of physicians in Texas and the distribution of these physicians by specialty, geographic area, and population. This has implications for Texas medical schools. For example, in thinking about how many physicians Texas needs and in what part of the state they are needed, one must also consider whether Texas has enough medical schools to provide the right number of physicians, whether or not the location of these schools plays a part in where the physicians practice, and, if so, whether the schools are in the locations where there are currently underserved patient populations.

These questions are not new. The Texas Medical Association has standing committees on physician workforce and distribution of health services, but these issues are either not discussed at all or are discussed *sotto voce*.² However, they require sustained policy and management attention from all parties—medical educators, the physician community, the Texas Higher Education Coordinating Board, the Legislature, and the executive branch of Texas state government.

In March 2000, under the auspices of the Texas Higher Education Coordinating Board, RAND organized a conference in Austin that brought together health professions educators from across the state to ferret out and discuss the issues. The findings of the conference were key in shaping this report.

Finally, the RAND study also benefited from the many studies that have been conducted recently by Texas organizations, both governmental and non-governmental, on various aspects of the health professions workforce, the distribution of health professionals in the state, and health professions education.

Organization of the Report

The first section of this report highlights an issue that emerged unexpectedly during the March conference—the need for more and better data. The next three sections discuss the issues related to the education of doctors, nurses, and allied health professionals. The last

² Monica Maldonado, "Fight to the Finish: The race to be the new medical school on the border heats up," *Texas Medicine*, December 1999, pp. 62-67.

describes the major conclusions of the RAND study. Following these main sections is the Appendix, which provides more detailed information about the allied health professions.

A RAND companion analysis of Texas higher education in general looks beyond the next five to ten years and addresses the question of how well the Texas system will meet the challenges of the future if current trends and patterns continue. It also identifies the kinds of changes that may be needed. These results are presented in a separate report, *Achieving the Texas Higher Education Vision* (Roger Benjamin, et al, 2000, RAND: Santa Monica, California, DRU-2305).

2. THE NEED FOR BETTER DATA

Dr. Ben Rainer of the Texas Statewide Health Coordinating Council spoke at the March conference about the need for more and better data related to the health care professions workforce. The lack of adequate data limits not only the study of the issues but also policy development.

The efforts of the Texas Medical Association and the Texas Nurses Association should be noted, however, because both organizations have invested resources in generating pertinent data and analyses. Meanwhile, the state of Texas has given responsibility to the Statewide Health Coordinating Council for development of a state health plan with a focus on workforce planning. Yet, the Health Coordinating Council does not have adequate funds for data collection and analysis.

Will the Coordinating Board assume leadership in generating a database that is adequate for all policymakers, not just those addressing the immediate concerns of the Board? Or will it yield to pressures to persist in an incremental approach? The answer is unclear at this point.

3. PHYSICIANS

While the supply of physicians in Texas may be adequate for the near future, the distribution of these physicians is not, and medical schools are responding in several ways.

The Supply of Physicians

A Texas Medical Association analysis supports the view that, as a whole, the supply of physicians in Texas is adequate through 2005.³ Here are the numbers:

- The number of licensed physicians in Texas grew from slightly less than 12,000 in 1973 to 32,101 in 1998, far more rapidly than the 64 percent growth in population (from 12 million to 19.7 million) that occurred in this same period.⁴
- The Texas Medical Association projects a net average annual increase of 1,055 in the number of physicians, which yields an estimated total of 37,587 through the year 2005 and compares to an estimate of requirements of 35,973.^{5,6} These estimates assume the availability of a continuing supply of nurse practitioners and physician assistants (although not on a one-to-one basis). If these health professionals were not available, physicians would handle certain additional tasks and more physicians would be required; without them, the estimated shortfall would be some 9,000 physicians.

³ Texas Medical Association, *The Physician Workforce in Texas: Implications for Medical Education*, Austin, 1999 (hereafter TMA, *Physician Workforce*).

⁴ TMA, *Physician Workforce*, pp. 5-6.

⁵ P. 8 of Report #3 of the Council on Medical Education, submitted to the Texas Medical Association House of Delegates at their 1999 Annual Meeting (hereafter TMA, CME Report 3-A99)

⁶ TMA, CME Report 3-A99, pp. 9-10.

- The ratio of the total number of Texas licensed physicians in 1996 was 158 per 100,000 population; this increased to 162 per 100,000 by 1998.⁷ These figures compare to 185 practicing physicians per 100,000 population for the U.S. for 1996.⁸

Texas achieves this supply of physicians in two ways: by training its own new doctors and by the migration into Texas of physicians trained in other states and other countries. The figure on the next page shows all new licensees from 1984 through 1998, including endorsements of those individuals licensed elsewhere and granted a Texas license by reciprocity and those admitted to practice as a result of passing the Texas licensing examination.⁹ The annual average for the entire period (1984-98) for all new licensees was 2,179; those licensed from another state averaged 1,098; and those licensed by in-state examination, 1,048.¹⁰

The annual average of new licensees for the more recent 1994-98 period by location of medical school was 831, in state; 1,077, out of state; and 589, foreign. Graduates of Texas medical schools constituted 33 percent of the 12,485 licensees in the 1994-98 period.

Of the 32,101 licensed physicians in Texas in 1998, 90 percent were engaged in direct patient care and 44 percent in primary care; 18 percent were women, 10 percent Hispanic, three percent Afro-American; and 92 percent practiced in urban areas and eight percent in rural areas.

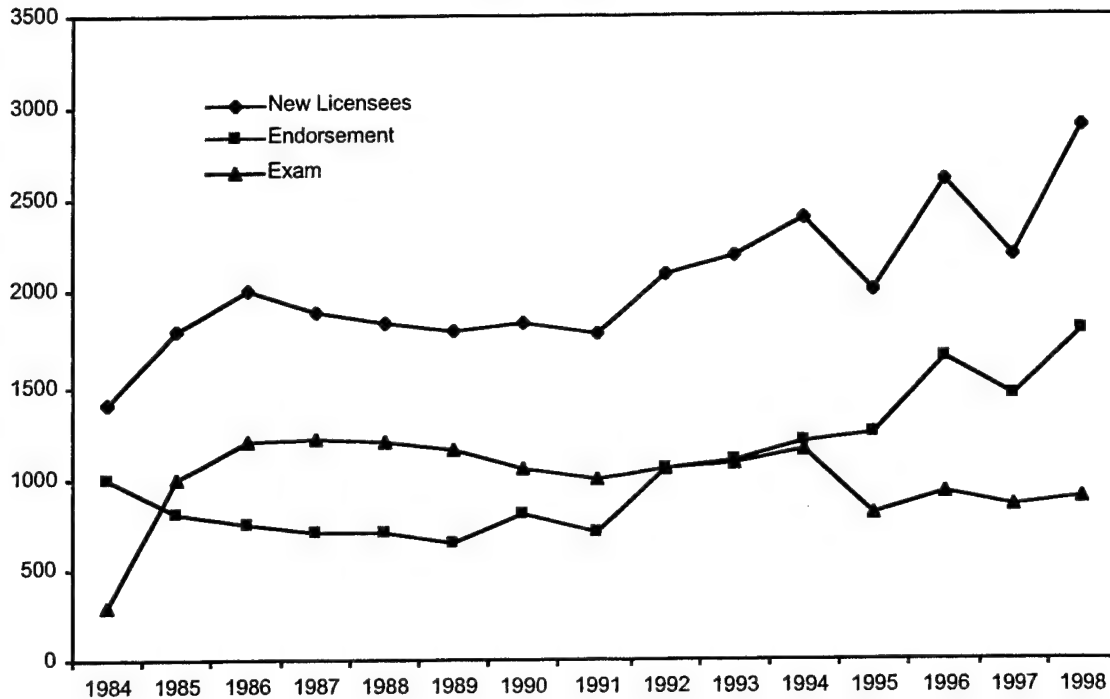
⁷ TMA, *Physician Workforce*, p. 15.

⁸ *The Physician Workforce in Texas: A Comparative Analysis with California and New York*, February 1999. Prepared for the Texas Medical Association by The Center for Health Workforce Studies, School of Public Health, University at Albany, State University of New York, Rensselaer, N.Y.

⁹ TMA, CME Report 3-A99, p. 17

¹⁰ These data and those following are from the Texas Medical Association and are based on data from the Texas Board of Medical Examiners. TMA, *Physician Workforce*.

Texas Physicians



Prepared by Texas Medical Association, February 1999
 Source: Texas State Board of Medical Examiners

Distribution of Physicians

Although the overall supply of physicians is adequate, another issue has stimulated substantial discussion: the distribution of physicians by specialty, geographic area, and patient population.

Distribution of Physicians by Specialty

In the mid-1990s, the balance between primary and specialty care physicians was the subject of great concern in Texas, as in the rest of the country. In 1995, a task force of the Department of Health and the Texas Higher Education Coordinating Board, responding directly to the Legislature, addressed the question of the number and proportion of primary care physicians in Texas.¹¹ It concluded that there were too few primary care physicians and recommended that the state adopt the national criterion of a 50-50 split as the normative target.

¹¹ *Physician Work Force Strategy for Texas, A Report to the Subcommittee on Health and Human Services and Education of the House Appropriations Committee*, February 1, 1995, prepared by the Texas Department of Health and the Texas Higher Education Coordinating Board.

Texas has undertaken several initiatives to increase the number and proportion of primary care physicians. These include:

- State supported training programs, beginning in 1977, for community physicians
- Promoting health careers among high school students
- Preceptorships for medical students
- Developing family practice faculty at the medical schools
- Residency programs for family practice and primary care physicians
- Recruitment fairs to attract physicians to rural areas
- Primary care physician registries
- Loan repayment programs for primary care physicians and physician assistants

The federal government has also funded various training and practice programs.¹²

The data indicate that Texas has moved toward its target goal: primary care physicians increased from 40 percent of all physicians in 1990 to nearly 45 percent in 1999.¹³ Specific deficits still exist, however, in family practice and internal medicine¹⁴ and in the specialty area, orthopedic surgery.

Distribution of Physicians by Geographic Area and Population

Another concern has been the geographic distribution of physicians, especially in rural areas but also in the inner cities and along the border with Mexico. Since the underserved usually reside together in certain geographic areas, the distribution of physicians by geography and by patient population are closely linked.

The Center for Rural Health Initiatives published its biennial report in early 1999. The report makes clear that the issues of rural health care are very complex. They include public health and population-based issues such as community education and economic

¹² TMA, *Physician Workforce*, pp. 44-46.

¹³ TMA, *Physician Workforce*, p. 9.

¹⁴ TMA, CME Report 3-A99, p.11.

development.¹⁵ They also include finance and reimbursement and personal health issues such as access to resources, information, and trained health professionals. The report offered these facts about rural Texas:

- Fifteen percent of Texans live in 196 rural counties
- 62 Texas counties are "frontier" counties with seven or fewer individuals per square mile.
- 175 entire Texas counties are designated as "medically underserved areas." The same designation was assigned to parts of another 48 counties.
- 113 entire counties are designated as "health professional shortage areas." The same designation was assigned to parts of another 47 counties.¹⁶

The Center for Rural Health Initiatives report recommends that recruiting primary care physicians "be recognized as a most significant problem" and that communities receive help in retaining these physicians with, for example, the development of *locum tenens* relief services for primary care providers in rural areas. *Locum tenens* services allow the providers to take time off and leave their practices temporarily in the hands of other skilled providers.

There are several limitations of the Center's analysis. Like most states, Texas has not developed an analytical model for defining rural or medically underserved areas that is independent of the federal government's. Unless the federal definition is very similar to what the state would develop, the difference makes the state dependent on the federal government and means the loss of federal funding for various Texas programs. This problem has led to the recommendation that Texas develop "a state-level set of designation criteria" to assist rural areas in maintaining eligibility for "necessary programs and services."

¹⁵ Center for Rural Health Initiatives, *Rural Health in Texas, 1999: A Report to the Governor and the 76th Texas Legislature*, Austin, Texas, January 1999 [hereafter *Rural Health, 1999*].

¹⁶ *Rural Health, 1999*, pp. ix, xxi, and xxii.

It applauds legislative efforts to develop a uniform definition of "rural" that would apply to rural health services and recommends that this effort continue. A politically determined Texas definition is essential for guidance to administrative agencies and to medical schools seeking to fashion programs that respond to an identified need.

The Center for Rural Health Initiatives report does not provide a discussion about the individuals and families who, unlike those who are trapped in rural areas by factors beyond their control, voluntarily choose to live in rural areas. We need to learn more about these rural residents and their expectations for health care services. For example, do they understand that, as a result of their choices, they may not have ready access to health care services and that such services may cost more when they are available? Do they understand the need to take more responsibility for their own care without expecting outside intervention?

Another issue not addressed by the report is that Texas rural health programs usually provide resources and services from the top down; i.e., based on best estimates of need but not informed by local input or driven by local demand. An alternative approach that might promote decisions by physicians to live and work in rural areas is to encourage "demand-oriented" efforts at the community level. Such a bottom-up approach could provide modest grants to communities that wish to define their needs for physicians, physician assistants, and nurse practitioners, and indicate their willingness to offer a package of economic incentives and other amenities to health professionals willing to locate in their communities. These incentives might include the repayment of student loans, housing, or other economic or social amenities, but they would be defined by the local community bidding for the services of health care providers.

One factor that might limit a bottom-up approach is the fact that there are more data available on physicians trained in Texas than on those who migrate into the state, so bidding for the services of the latter may be difficult. The Texas Medical Licensing Board obtains data on all individuals who receive their M.D. or D.O. degree or their residency training at Texas institutions, but very few data, especially

about location preferences, are obtained from physicians migrating to Texas from other U.S. states or from other countries. This data could be elicited by a one-page questionnaire attached to the Board of Medical Examiners application when the request for a reciprocity endorsement is submitted. This information could then be provided to underserved communities so that they may "advertise" their willingness to provide economic incentives to those who agree to locate in their communities.

The Medical Schools Respond

Medical schools can only assume some responsibility for solving problems related to physician supply and distribution. Where do their responsibilities start and stop? For their own purposes they maintain a balance between undergraduate and graduate students. They also look at the data related to the number of physicians needed in the state and whether there is an adequate supply, and they determine the number of graduates desired each year and translate that into the number of new students they should accept. They pay attention to data about the state's existing ratio between primary care and specialty care doctors and they are able to influence this distribution somewhat when they counsel prospective medical students about career decisions. Their influence is limited, however, by the personal preferences of individual medical students and residents.

Medical schools are in a relatively weak position to influence directly the decision of medical students to live and work in rural or medically underserved areas, but they have tried to influence these decisions in several ways.

Recruiting a Diverse Student Body

Some efforts to affect the distribution of physicians in underserved areas have focused on the diversity of the physician workforce. Medical students recruited from minority communities and from rural areas are more likely to return to such communities and areas to practice. This is an area where medical schools can exert some influence on physician distribution, albeit indirectly.

Responding to the Needs of the Indigent and Uninsured

In those areas with high concentrations of the indigent and uninsured, medical schools are weakly situated to provide needed health services without external federal or state subsidies. And it may not be that the supply of physicians is inadequate, but that the population simply cannot pay for health services. This threatens the provider institutions, such as academic health centers, to which these populations turn for care. Texas Medicaid severely limits eligibility and covered services, exacerbating the access-to-care issue that stems from insurance limits. On the other hand, to argue that Texas Medicaid should provide more care opens the argument to broader issues that are not within the scope of this study. For example, if more health care services are provided for the underserved populations along the border, will that encourage more migration across the border? Is that an acceptable outcome?

Creating Regional Academic Health Centers

For now, a polite consensus exists among medical educators in Texas that no new four-year medical schools are needed. Most of the Texas medical schools are located in the state's major urban areas, thus reinforcing the existing distribution of health services. However, major population growth in the state is generating pressure for additional medical schools.

One response has been the creation of two-year regional academic health centers (RAHCs) in certain geographic and underserved areas. Three institutions—the University of Texas, the Texas Tech University Health Science Center (formerly Texas Tech University), and Texas A&M—have or are forming two-year regional medical schools in Amarillo, Odessa, the Lower Rio Grande Valley, Laredo, El Paso, Brownsville, Harlingen, McAllen, and Corpus Christi. The policy issue is whether these RAHCs should be expanded over time into four-year medical schools. A recent article in *Texas Medicine*, the publication of the Texas Medical Association,¹⁷ reports that Texas Tech announced in August 1999 its intention to transform its El Paso two-year School of Medicine into a

¹⁷ Maldonado, pp. 62-67.

four-year institution over a 10-year period. The El Paso campus trains about 100 of the third- and fourth-year students on the Lubbock campus and approximately 170 residents in 10 fields.¹⁸ Texas A&M Health Science Center has proposed the Coastal Bend Health Education Center in Corpus Christi. The center would include fourth-year medical training as well as training in nursing and allied health.

Common to all these initiatives is advocacy by each area's legislators. Medical educators appear less enthusiastic than the legislators about new medical schools but confront complex needs: to respond to legislative interests, to protect existing institutions, to engage in defensive moves relative to competitors, and to address genuine needs for physician and health services in underserved areas and populations of the state.

One's view about whether one or several new four-year medical schools are needed in Texas is a function of how the issue is framed:

- Is a new medical school a way to compensate for problems associated with the distribution of physician and health services?
- Is it a means to provide a more equitable distribution of health education institutions, and thus a higher probability that its graduates will remain in the community?
- Is a medical school an engine of economic development or a way to ensure economic growth of the area, especially in leading-edge science and technology-based industries?
- Does a new school help to maintain the overall high quality of Texas medical education that has evolved over time? Or is it a forward look to the demographic changes that are forecast for Texas' population?

¹⁸ Maldonado, p. 66.

Regardless of one's view, the issue of new four-year medical schools is likely to increase in salience. At the March conference, Dr. Carol Aschenbrenner suggested ten questions that might be considered in the discussion. The first of these has been addressed for the short term by the RAND study. All the questions will be addressed by legislators, educators, and the citizens of Texas going forward.¹⁹

- What is the need?
- What evidence is there that a new medical school would meet the need?
- Is a new medical school the most effective way to meet the need?
- What resources will be needed to create a new medical school?
- Will a new medical school increase the net number of Texas graduates?
- What is the targeted level of quality for students, educational programs, and clinical services?
- What new demand for clinical services might be stimulated by a new medical school?
- What new educational opportunities might be seized by a new medical school?
- How will a new medical school be supported financially in its initial years and as it faces the need for continued revenues?
- What are the realistic potential benefits to the city and region of the new school and how long will it take for these benefits to materialize?

¹⁹ Presentation of Dr. Carol Aschenbrenner, transcript, "Looking to the Future: Health Professions Education in Texas, The Next Decade—or Two," Austin, Texas, conference organized by RAND under the auspices of the Texas Higher Education Coordination Board, March 6, 2000.

3. NURSES

Both the country as a whole and the state of Texas face a shortage of well-trained nurses. This section of the report describes this shortage.

The Nursing Shortage in the United States

Since the shortage of nurses in Texas is related to the shortage of nurses in the country as a whole, our discussion begins with a look at the big picture.

Peter I. Buerhaus, Ph.D., R.N.²⁰ discussed the U.S. shortage of Registered Nurses (RNs) at the March conference. He noted that the demand for trained nurses derives from the demand for health care in general and that the nation faces increased demands for health care from a population that is growing, aging, and living longer. This increased demand for services will be felt forcefully in the 2010-2020 period as baby boomers retire, as the Medicare population increases, and as the workforce shrinks. Thus the nursing shortage can be expected to increase. Buerhaus estimates a shortage that ranges from 200,000 to 400,000 by 2020. A precise estimate is not as important as the direction and magnitude of the anticipated shortfall. Specific shortages will be in ICUs, operating rooms, and recovery rooms in all regions of the country.

Buerhaus described specific factors that affect the supply of nurses. The following factors he describes as "short term." Any of these may cause an individual RN to stay out of the work force temporarily, and/or they may cause the supply of nurses in the workforce to fluctuate in short cycles.

²⁰ Dr. Buerhaus was then at the Harvard University School of Public Health; he is now the Valerie Potter Professor of Nursing Economics at the Vanderbilt University School of Nursing.

- The presence of an older adult in the household. Where an older adult, usually a parent, lives in an RN's household, this dampens labor force participation because the RN, usually a woman, spends substantial time caring for the older person.
- Wages. Wages affect participation directly, increasing participation as they move up, and indirectly by how they compare to comparable occupations and available opportunities.
- Spousal income. Spousal income strongly affects participation. As spousal income, and thus family income, rises, participation is diminished because total family income exerts a greater direct effect than nursing wages.
- Age of RN. The older an RN, the lower the participation as nurses withdraw from the labor force.
- Job satisfaction. As satisfaction increases or decreases, the RN may be more or less willing to work.

Buerhaus also described long term factors:

- An aging nursing faculty. Nursing faculty are aging and many will retire soon, thus creating the likelihood of a serious bottleneck in the training of new nurses.
- Wages. The effect of wages on participation will be judged in relation to their growth over time, their relation to inflation, and in comparison to other occupations that are available.
- Career preferences. One of the greatest challenges in obtaining an adequate supply of nurses is how a nursing career compares to other career opportunities. A profound effect of the women's movement has

been to make many opportunities available to women, thus making nursing compete with other careers in recruiting women.

- Size of age cohorts. The most critical variable is the aging of the RN workforce, which according to Buerhaus is the most rapidly aging occupation in the U.S. The average age of employed RNs increased by six years from 1980 to 1996. The estimated increase in average age from 1995 onward is one-third of a year. The only comparable aging is seen in teachers. In 1980, 25 percent of RNs were under age 30; in 1996, the proportion had fallen to nine percent. The drop in the percentage of nurses among those under age 30 was 35 percent compared to a drop of five percent in the general population. In 1993, for the first time, the number of nurses over 40 years of age exceeded the number of nurses under 40.

What is the Situation in Texas?

In the report *Health and Nurses in Texas: The Supply of Registered Nurses: First Look at Available Data*,²¹ the authors offer these general findings:

- The Texas ratio of RNs to population is "well below" the national average; to match the national average of nurses to population in 1998 Texas would require 39,000 more RNs; the ratio of RNs to population for all nursing specialties in the border region is "great and unmet"
- Wages for RNs have increased only slightly between 1994 and 1998
- RN employment in hospitals has not declined and some nurse specialties have had increasing vacancies

²¹ Donald R. Miller, *Health and Nurses in Texas: The Supply of Registered Nurses: First Look at Available Data*, A report of the Nurse Workforce Data System, Texas Nurses Foundation, in partnership with Texas Institute for Health Policy Research and the Center for Health Economics and Policy, University of Texas Health Science Center at San Antonio, Vol. 1, No. 1, Winter 2000.

- RNs in Texas are aging and withdrawing in large numbers from active participation in the workforce
- Minorities are underrepresented in the nurse workforce
- Nursing graduates are decreasing, and nursing schools' applicant pools are shrinking
- The faculty in nursing schools is aging, and the capacity of the schools for developing more nursing professionals has been diminishing

Various aspects of the nursing shortage in Texas were highlighted by three commentators at the March 6 conference: the nursing shortage is acute; there aren't enough nursing faculty; and the focus needs to be on not just recruitment but also retention of nursing students.

The Shortage is Acute

Dr. John Crossly, Vice President of Nursing Operations, M.D. Anderson Cancer Center, Houston, underscored the acute shortage of nurses. Last year, M.D. Anderson Cancer Center employed 1,200 RNs and had 200 vacancies; this year it employs 1,400 RNs and still has 200 vacancies.

The Texas Medical Center, of which M.D. Anderson is one major center, has initiated an effort to develop a 50-year workforce plan and Crossly reported on four initiatives within this plan. These were the development of basic demographic data on nursing (only limited data now exist); a look at the demands on nursing education; the collective recruitment of nurses to the Texas Medical Center; and general recruitment to the nursing profession.

Nursing Faculty is the Bottleneck

Dr. Carolyn Gunning, Dean of the Texas Women's University School of Nursing, noted that nearly 3,500 qualified applicants to nursing programs were not admitted in 1998. This indicates a strong potential for recruiting new nurses, even when allowing for double counting in the

pool. Budgeted nursing faculty positions were identified as the principal capacity constraint in the acceptance of new students. In addition, the absence of competitive faculty salaries and the limited pool of qualified potential faculty were other constraints. These constraints pointed to nursing faculty as the bottleneck in responding to the nursing shortage.

Gunning posited three nursing workforce goals: to increase the total number, increase the diversity, and increase the number and proportion with advanced education. She argued that Texas should strengthen existing programs, not create new programs; creating new programs only redistributes nursing students and reduces filled nursing faculty positions. In 1992, 44 programs had enrollments of 8,870 compared to 50 programs in 1998 with 6,786 enrollments. She called for more coordination within the Texas Higher Education Coordinating Board between the divisions of universities and health-related institutions and community and technical colleges.

Retention of Nursing Students, Not Recruitment, is the Principal Short-term Problem

Dr. Paula Mitchell, Head of the Nurse Associate Degree Program, El Paso Community College, reported that in the border city of El Paso, 50-80 percent of the student population is Hispanic, and typically ranges in age between 28 and 35 years. Recruitment is receiving sustained attention in the form of outreach programs to high schools and middle schools.

But retaining nursing students once they begin their academic training is the principal short-term problem. Students have academic deficiencies, particularly in reading and math, which require remediation. They also often have personal, family, and economic problems that complicate completion of academic studies. Counselors are key individuals in the effectiveness of both recruitment and retainment efforts.

4. ALLIED HEALTH PROFESSIONALS

Allied health professionals fulfill many important non-physician, non-nurse functions in the delivery of health care services. They account for an estimated one-third of the 10.5 million health care workers in the United States, or over three million workers.

In this part of the report, we describe the allied health-related issues that emerged from the study. They include:

- Defining and describing the allied health professions
- How these professions are changing and why
- The problems associated with education, accreditation, and regulation
- "Degree creep;" i.e., the fact that some allied health programs are steadily raising the degree requirements for graduates
- The difficulty of transferring credits in allied health programs from one institution to another

Defining the Allied Health Professions

The first problem confronting the allied health professions is that many people, including those who are otherwise very familiar with health care, remain relatively uninformed about the allied health professions. And no wonder: today, some 200-300 different occupations and professions are included in a broad definition and this definition must stay fluid to accommodate the changing nature of medicine.

In organizing the March conference in Austin, Drs. Marilyn Harrington²² and Richard A. Rettig prepared a primer on allied health

²² Dr. Marilyn Harrington is Dean of the School of Allied Health, University of Texas, San Antonio, an allied health professions educator and member of the Planning Committee's Task Force on Health Professions Education.

for a broad audience of policy makers who are not in the allied health arena. The primer is included as an appendix to this report.²³ The primer elaborates on some of the subjects discussed in this section of the report and includes others, as well.

Dr. Harrington defines allied health in terms of what it is not. It is not medicine, it is not nursing, but it is "the rest of the gang" in health care. Of the more than three million allied health professionals in the U.S., nearly 300,000 were employed in Texas in 1998 according to the Texas Bureau of Labor Statistics.²⁴ These are listed in 30 occupational categories, of which the three largest groups are:

• Orderlies and attendants	44,115
• Home health aides	43,000
• Paraprofessionals and technicians	37,250

The list also includes:

• Dental hygienists	7,360
• Dental assistants	15,340
• Medical and clinical laboratory technologists	10,410
• Medical and clinical laboratory technicians	9,370
• Pharmacy technicians and aides	13,080
• Speech-language pathologists and Audiologists	6,450
• Electroneurodiagnostic technologists	270

²³ Marilyn S. Harrington and Richard A. Rettig, "Allied Health Professions Education: A Primer," March 2000.

²⁴ Texas Bureau of Labor Statistics, Appendix to Marilyn S. Harrington and Richard A. Rettig, "Allied Health Professions Education: A Primer," March 2000.

Changes in the Allied Health Professions

Several factors impact the allied health professions. Managed care has altered relations among providers, including allied health professionals, and between providers and patients. Cost containment places pressures on employers to find the lowest-paid qualified health professionals. Technology in medicine defines new occupational categories in allied health, as it does in physician and nursing specialties. Changing information technology creates new occupations and professions and alters the ways in which health services are provided. And quality assurance and improvement, including error management, place additional requirements on job performance "downstream," where many allied health professionals provide service, as well as "upstream," on the training that allied health professionals receive.

The Texas Higher Education Coordinating Board has simplified procedures for the approval of new programs. However, it is still difficult to create new programs that respond in a timely way to changes in the health care marketplace, according to Ms. Cecile Sanders, the Dean of Health Sciences at Austin Community College.

No Central Authority for Education and Regulation

The fact that the allied health professions are so hard to define is reflected in the fact that no central authority brings continuity to education programs for allied health professionals or regulatory consistency to the professions themselves.

Education

Allied health professionals are educated in academic health centers (eight percent of graduates), vocational-technical schools (10 percent), community colleges (31 percent), and four-year institutions (36 percent).²⁵ In the entire U.S. there are 5,000 accredited programs in 3,000 different institutions. In 1996, there were 233,000 allied health

²⁵ Presentation of Dr. Marilyn S. Harrington, transcript, "Looking to the Future: Health Professions Education in Texas, The Next Decade-or Two," Austin, Texas, conference organized by RAND under the auspices of the Texas Higher Education Coordination Board, March 6, 2000.

graduates in the U.S. Educational programs range from short courses leading to a certificate to doctoral programs, including associate and baccalaureate degrees along the way. In Texas, in 1998, there were 358 allied health programs, 13,600 enrolled students, and slightly more than 7,000 graduates.

The increasing demands for assuring the delivery of quality care to patients, including the reduction of clinical errors, highlights the absence of integrated training of allied health professionals with doctors and nurses. Health care providers have yet to demonstrate their ability to overcome their narrow professional orientation and supply on-the-job, team-oriented training of physicians, nurses, and allied health professionals.

Ms. Cecile Sanders, the Dean of Health Sciences at Austin Community College, presented the perspective of the community colleges when she cited the shrinking clinical training sites, faculty shortages, and data needs for workforce decision-making as important concerns.

Regulatory bodies commonly "micromanage" educational programs and institutions without reason or the proper expertise. For example, they have specified how many and what type of faculty an institution should include. They cited one institution for inadequate storage space. And, more seriously, the Texas legislature recently required use of a "safe needle" to control blood-borne pathogens, not knowing that such needles are unsafe when used in dentistry.

Dr. Harrington identified the emergence of proprietary educational institutions as a major development that challenges state-funded institutions. They are able to respond more rapidly to a changing market than public institutions and they lie beyond the reach of the agencies that regulate public or non-profit institutions.

Regulation

Lacking the autonomy of medicine and the coherence of nursing, allied health faces a daunting number of individual professional licensing bodies. These bodies are public and private, federal, state and local, and vary from one allied health profession to another. There is little rhyme or reason to the variation, or little rationale for the different health services roles of the various professions, and

virtually no analysis of the relation of professional competencies to the health care outcomes that they are intended to promote.

There are nine accrediting bodies in allied health, unlike the single bodies in medicine, nursing, and pharmacy. The largest is the Commission on Accreditation for Allied Health Education Programs (CAAHEP), which was created in response to the withdrawal by the American Medical Association from this function. CAAHEP represents 18 different allied health professions and over 2,000 different institutions and programs. But specialized accrediting bodies exist for occupational therapy, dietetics, dental hygiene, dental laboratory technology, audiology, speech/language, physical therapy, radiology technology, nuclear medicine, and clinical laboratory science. In addition to the nine accrediting bodies, there are regional and state regulatory bodies. There are internal bodies within educational institutions (curriculum committees, registrar's office requirements, and regents' requirements). There are also requirements that stem from the Texas Higher Education Coordinating Board, whose two divisions have somewhat different agenda and do not always communicate well with each other.

These regulatory bodies are process oriented and highly prescriptive. They don't focus on health outcomes. Outcome measures, where they exist, are often not achievable and impossible to track. They usually reinforce narrow specialization and further fragment allied health. They often link accreditation of educational programs with the licensing of professionals. No accreditation without licensing is the battle cry. Absent the separation of these two functions, Dr. Harrington did not expect much creative thinking or research about the competencies specified by licensure and their effects on patient outcomes. The "standards" that emerge from this fragmented process are not always in the best interests of the patient; more often they define the best interests of the relevant professionals. Sometimes the absence of regulation is noteworthy. In Texas, clinical laboratory scientists are unlicensed. Yet they are engaged in critical diagnostic functions, such as cross-matching blood, providing the material for diagnosing cancer, AIDS, and other diseases.

Degree Creep

At the March conference in Austin, Dr. Marshall Hill, the Associate Commissioner of the Texas Higher Education Coordinating Board, expressed the Board's concern that some allied health professions are steadily raising the degree requirements for graduates.

The increasing tendency to require a doctorate degree for entry to the profession reflects the growing scientific, technological, and clinical content of many allied health professions and their desire to reflect a changing knowledge base in the training of their professionals. However, the requests to the Coordinating Board for the approval of new doctoral programs are not always accompanied by a compelling educational or health care-related rationale.

The costs per student increase markedly as training progresses from the baccalaureate to the master to the doctoral level. The total costs to the state increase substantially when the degree requirement is abruptly raised from the master's level to the doctorate. Texas' costs for training an allied health professional to the doctoral level versus training more math and science teachers must be weighed, but there is no clear metric for doing so.

Dr. Hill did not presume that the degree creep is unwarranted, but he suggested that the Texas Higher Education Coordinating Board needs to receive clear and standardized justifications from allied health programs when they request upgrades of their programs.

Transferring from One School to Another

The Texas Higher Education Coordinating Board is also concerned about the transferability of student credits in allied health education programs as they affect students in Texas.

Academic credits transfer most easily; these credits are earned in two years in a community college and often qualify as lower division years for the baccalaureate degree in a four-year institution.

The most difficulties arise in workforce education programs, which encompass many if not most educational programs of the allied health professions. Sometimes the technical career path does not extend into

the four-year institution. Connecting training programs across two-year and four-year institutions is especially difficult in fields such as imaging, where new modalities continue to develop, according to Ms. Cecile Sanders, the Dean of Health Sciences at Austin Community College.

Students sometimes face difficulty in transferring credits even within the same discipline or field of study and may be required to repeat lower division work. They are thus sometimes discouraged from seeking four-year degrees. Data from a hastily conducted survey, with two-thirds of community colleges responding, suggest that perhaps two-thirds of credits of allied health students transfer as either technical or elective courses. The issue, however, remains to be clarified.

5. IMPLICATIONS FOR THE TEXAS HIGHER EDUCATION COORDINATING BOARD

As a result of the study, RAND identified the issues facing the Texas Higher Education Coordinating Board as it plans for the education of health professionals in Texas. The Board must develop more and better relevant data. It faces questions about the number and distribution of physicians and nurses. And it must define, educate, and regulate the allied health professions. RAND makes the following recommendations, each of which is discussed below.

- Develop a system for gathering pertinent data, especially related to the allied health professions, before making any major policy decisions
- Do not build a new four-year medical school at this time because the supply of physicians is adequate for the near future. Rather, plan ahead for the proper distribution of physicians to serve the Texas population
- Focus on the shortage of nurses; it will grow even more acute
- Define the allied health professions, develop an integrated approach to their education, and reform the regulatory system
- Optimize the Coordinating Board's ability to focus on the issues

Develop a System for Gathering Pertinent Data

Many recognize the need for more and better data related to health education issues. The legislature should respond with adequate financial resources.

RAND recommends that one agency take responsibility for data collection and analysis, that the agency should receive adequate funding, and that these tasks should precede serious policy development.

Do Not Build a New Four-year Medical School at This Time

The total supply of physicians in Texas appears to be sufficient for the population of the state, at least through 2005. No new four-year medical school is needed in Texas and thorough analysis of need should precede any effort to move in this direction. However, we recommend that the Texas Higher Education Coordinating Board and all interested Texas governmental and non-governmental agencies and organizations should monitor demographic developments in the state closely.

The Texas Higher Education Coordinating Board should pay close attention to the distribution of physicians throughout the state, both because it shares responsibility for ensuring that all the populations of Texas have access to care, and because the issue has implications for the number of medical schools. The distribution of physicians within Texas reveals some inadequacies. In specialties, shortages appear in orthopedic surgery, operating room, emergency room, and intensive care services. However, number and proportion of primary care physicians in the state is certainly in better relation to specialists than at the beginning of the decade. In geographic terms, there is substantial concern for availability of physicians in rural areas and to serve inner city and underserved minority populations. The problems of the latter may stem from the incidence of an indigent population and one without adequate health insurance. This conundrum of issues is potentially a source of future policy controversies.

The monitoring effort should give greater attention to the immigration of physicians to the state than it has in the past, in part to influence the location of such physicians.

If there is inadequate distribution of physicians and the response by medical schools and other responsible parties to this distribution is inadequate, that may strengthen the arguments for new medical schools. Under such a scenario, demands for a medical school may actually be proxies for demands for better distribution of physicians and health services.

Independent of the medical schools' response to poor distribution of physicians and the corollary poor distribution of health services, if political pressures to create new medical schools increase, it then will become necessary to identify the factors that should be considered in making such a decision. Those factors have been set forth in the Aschenbrenner questions. The Legislature should be strongly encouraged to request the evaluation of these questions by the Texas Higher Education Coordinating Board before it mandates the creation of any new four-year medical school.

Address the Nursing Shortage

The full dimensions of a prospective nursing shortage need to be assayed and strategies designed to respond to it.

The increasing demand for health care services and the prospect of an unprecedented shortage of RNs poses a serious challenge to nursing education. The existing nursing workforce is predominantly female and not fully representative of minority populations in the country. Thus, one challenge is to make the nursing profession more attractive to men, and to men and women from minority communities.

In addition, the Texas Higher Education Coordinating Board should address and answer the following questions:

- What analyses, if any, should the Board undertake to obtain a clear estimate of nursing needs in Texas in the next five, ten and twenty years? Should it rely upon the analyses of others?
- What data needs exist, particularly to help the Board understand nursing workforce needs? Which of these workforce needs should the Board address?
- Should Board-approved efforts be directed to increasing the number of Texas-trained nurses through existing schools and programs or through new schools and programs?

- What numeric targets, if any, should be adopted for increasing the number and type of nurses over what time period?
- What objectives should the Board adopt regarding the mix of Texas-trained nurses in terms of ADN's, BSN's, MSN and Advanced Practice Nurses, and nursing doctorates?
- What strategies exist to stop the decline in nursing enrollments? What strategies exist to increase the number of new entrants to nursing schools and programs? How might greater numbers of minorities and men be recruited to the nursing profession?
- What are the needs in nursing education for clinical training and how adequate are existing clinical training resources?
- What objectives and strategies should the Board consider regarding the need for increased numbers of nursing faculty?
- What are the implications for nursing education of increased demands for equity in the distribution of health services in rural and underserved areas and populations? How do these impinge on nursing schools and programs and on nursing education opportunities?
- What are the current, planned, and potential efforts to meet nursing educational needs by distance learning? What studies have addressed distance learning in nursing education? What studies are needed?

Define the Allied Health Professions and Reform the Regulatory System

More descriptive information is needed about allied health professions education if coherent, big picture policies are to be developed. The first challenge is to develop descriptive data on allied health that facilitates the understanding of these professions and their educational needs by an audience of policy makers who are not intimately familiar with them in advance. This challenge confronts the Coordinating Board, the Legislature, and all other government, not-for-profit, and for-profit organizations involved in health and health education. The primer that is included as an Appendix to this report points the way to this descriptive data but must be recognized as rudimentary at this point.

Absent a more comprehensive information base from which to develop policy, the fragmented nature of allied health and allied health education will mean that decision making will be characterized by incremental, piece meal responses to very specific and highly local considerations. Decision making will be similar to an automobile trip between major cities that is aided only by a detailed street map of one of them. Broad policymaking, characteristic of a trip organized by a map of appropriate scale, will be effectively ruled out.

A piece meal, small-scale approach to decision making would be acceptable if the allied health professions were not important to the delivery of health and medical services. The implicit lesser status of allied health relative to medicine and nursing should not blind policymakers to the importance of allied health professionals as increasingly integral members of a health or medical care team. The pressures of cost containment on health care will not diminish in the future. Nor will technological innovation in health and medicine diminish. Allied health professionals, already important for their sheer numbers and range of professional roles, will only increase in importance in the future.

The Texas Higher Education Coordinating Board must also address the issue of regulatory reform of the accreditation and licensing policies, procedures, and practices that affect allied health educational programs

and professionals. In order to respond to this challenge, the Board would probably require the endorsement of the Legislature. In our judgment, that endorsement and support should be sought.

Regulatory reform won't be easy, but it is far from hopeless. Texas is a large state, with political, economic, and educational resources of consequence within the U.S. political system. It could "go it alone" and define an optimal regulatory system for a few of the most important allied health professions. Such an effort would meet with resistance within the state and at the national and regional levels, but it would also find allies, especially within Texas and especially if the purpose and approach are clearly communicated. An alternative would be to enlist New York and California in the reform effort.

In any event, the major choice before the Texas Higher Education Coordinating Board is whether the present "system" is deemed adequate as a basis for small-bore decision making or whether a broader, more coherent, and comprehensive approach would generate a sound basis for policy development. We believe the latter is needed if allied health education is to respond effectively to a rapidly changing health care system.

Optimize the Coordinating Board's Ability to Focus on the Issues

Many of the issues related to the education of health care professionals in Texas are related to the broader changes that are occurring in the health care system throughout the state and the country. For example, the demographics, and thus the patient population of Texas and other states and of the country as a whole, continue to change. The health care financing and delivery systems are vastly different than they used to be, and still changing. An understanding of these and other issues is fundamental to developing sound health education policy.

To enhance its understanding of the health care issues that have such a profound effect on health professions education, and to optimize its ability to perform in this dynamic environment, the Coordinating Board should review its structure. Traditionally an agency of higher

education, the Coordinating Board has been more strongly connected to higher education issues than to health issues. Internal responsibility within the Board staff is divided between two divisions; each division is oriented to a different set of health education institutions, and each has additional responsibilities.

In contrast, the three major academic health systems--the University of Texas, Texas Tech, and Texas A&M--all give added weight to health education by separating it from their schools' other educational activities.

The Coordinating Board should strengthen the resources it devotes to health education. And it should consider reorganizing itself in a way that promotes greater internal coordination in the development of policies and programs and greater articulation with the external environment.

APPENDIX

ALLIED HEALTH PROFESSIONS EDUCATION: A PRIMER

By Marilyn S. Harrington and Richard A. Rettig

This primer has been prepared to describe the allied health professions and their education for an audience outside this field. It aspires to raise policy issues through this description, both for those within allied health, in health education, and in health policy in general.

Definitions

The "definition" of allied health has evolved over a lengthy and complex history and reflects more than anything else the changing nature of health care in recent decades. The term "allied health" was apparently first used by staff of the Department of Health, Education and Welfare in the development of the Allied Health Professions Training Act of 1966.

The most recent definition of allied health is found in the Health Professions Education Amendments of 1992, which illustrates the definitional complexity of the term.

Section 799, E. (5) The term 'allied health professionals' means a health professional (other than a registered nurse or physician assistant) -- (A) who has received a certificate, an associate's degree, a bachelor's degree, a master's degree, a doctoral degree, or postbaccalaureate training, in a science relating to health care; (B) who shares in the responsibility for the delivery of health care services or related services, including -- (i) services relating to the identification, evaluation, and prevention of disease and disorders; (ii) dietary and nutrition services; (iii) health promotion services; (iv) rehabilitation services; or (v) health systems management services; and "(C) who has not received a degree of doctor of medicine, a degree of doctor of osteopathy, a degree

of doctor of dentistry or an equivalent degree, a degree of doctor of veterinary medicine or an equivalent degree, a degree of doctor of optometry or an equivalent degree, a degree of doctor of podiatric medicine or an equivalent degree, a degree of bachelor of science in pharmacy or an equivalent degree, a degree of doctor of pharmacy or an equivalent degree, a graduate degree in public health or an equivalent degree, a degree of doctor of chiropractic or an equivalent degree, a graduate degree in health administration or an equivalent degree, a doctoral degree in clinical psychology or an equivalent degree, or a degree in social work or an equivalent degree.

Often, as the above language indicates, allied health is defined by what it is not. It is not medicine, dentistry, nursing, osteopathy, optometry, pharmacy, podiatry or veterinary medicine.

General

Collectively, the allied health professions include more than 3 million individuals and comprise more than 60 percent of the entire health care work force in the U.S. The Texas Bureau of Labor Statistics lists 296,685 active allied health professionals in the state. (See the tables at the end of this appendix.)

There are 200 distinct disciplinary groups in allied health making it the most complex group of health professions. However, a 1988 Institute of Medicine study on allied health, *Allied Health Services: Avoiding Crises*, chose ten of the largest, most well known of these professions:

- Clinical laboratory sciences
- Dental hygiene
- Dietetics
- Emergency medical personnel
- Medical records administration (now known as Health Information Management)
- Occupational therapy

- Physical therapy
- Radiologic technology
- Respiratory therapy
- Speech-language pathology/audiology

In Texas, using the same criteria as the IOM, the ten largest and most well-known allied health professions in 1998 were:

- Clinical laboratory Sciences
- Radiologic Technology
- Emergency Medical Technology
- Physical Therapy
- Dental Hygiene
- Speech-Language Pathology and Audiology
- Respiratory Therapy
- Medical Records Technology
- Physician Assistants
- Occupational Therapy

The Drivers of Change in Allied Health

Two major factors are driving change in the workplace of allied health--cost containment and technological change in health and medicine. These drivers directly affect the demand for allied health professionals and indirectly impinge on the educational programs and institutions that train such individuals.

Cost containment has often been discussed in recent years as a primary characteristic of managed care. But it also characterizes state government actions to limit state Medicaid obligations, Congressional efforts to constrain the growth of Medicare in the Balanced Budget Amendments of 1997 (as amended in 1999), and private employer efforts to hold down health insurance premium costs or to abandon health insurance for employees entirely. Cost containment is a permanent feature of the health care landscape.

Concurrently, new technology continues to reshape medicine and health. Medical devices and equipment influence the work of allied health professions perhaps more strongly than new pharmaceuticals influence the practice of medicine. For example, the technologies of

imaging the body--ultrasound, computed tomography, magnetic resonance imaging--have undergone continuous technical change over two full decades, reshaping the demands for skilled technicians.

The effect of cost containment and technical change on the allied health workforce has been and continues to be profound. Employers of allied health professionals, necessarily, are engaged in a continuous search for lower-paid professionals, adequately trained and reasonably competent, on whom they can place increasing responsibility. Educating and training qualified personnel to meet these market demands is a challenging task.

Allied Health Education

There is no common educational level that best describes allied health's formal preparation.

- Graduates receive degrees for associate, baccalaureate, masters and doctoral degree programs.
- Graduates also receive certificates for completion of short courses of study.
- Some allied health professions have career ladders for their students and graduates; others do not.
- Some professions have various exit points as students progress through career stages.

There are approximately 4,500 allied health programs in the United States with an enrollment of 211,400 students and 91,000 graduates per year.

Allied health education programs are offered in many types of educational institutions, including high schools, vocational/technical schools, community colleges, four-year colleges and universities, hospitals, and academic health centers.

Accredited Programs by Type of Sponsoring Institution, 1997-98

Type of Institution	Institutions		Programs	
	<i>Number</i>	<i>Percent</i>	<i>Number</i>	<i>Percent</i>
Academic Health Center	102	3.6	465	8.0
Junior/Community College	644	23.0	1,805	31
Hospital:100-299 beds	231	8.2	124	2.1
Hospital:300-499 beds	297	10.6	208	3.6
Hospital:500 or more beds	231	8.2	305	5.2
Four-Year College or University	673	24	2,103	36
Vocational/Technical School	379	13.5	596	10.2
Other	247	8.8	227	3.9
<i>Total</i>	2,804	100	5,833	100

Almost all allied health professions are dependent on the health care industry for clinical sites to educate and prepare clinicians. The entirety of clinical education usually takes place in hospitals, clinics, doctor's offices, nursing homes, etc. that are under affiliation agreements with the educational institution. The clinical agencies do not receive payment for this service.

Allied health education programs have limited flexibility in meeting educational needs of the health care industry due to requirements of universities, the Texas Higher Education Coordinating Board, and accrediting agencies.

Similar to higher education in general, there is an increase in the number of distance learning programs offered by allied health education programs. The limitations of "service areas" and "state lines" placed on educational programs are blurring. Distance education increases access to allied health education for the "geographically challenged"

student while at the same time intensifying the competition among institutions for students in a formula enrollment driven environment.

The growth of proprietary schools is reshaping the postsecondary educational landscape, including that of allied health. Proprietary schools typically have greater flexibility in changing curricula, educate students in less time, better meet the needs of the student customer, and respond faster to the needs of the health care industry.

Historically, many allied health professionals have had to earn doctorates in a related field, such as education, administration, or a basic science, rather than their allied health field, primarily because there are very few programs at the doctoral level.

Programs at the master's level are either entry or advanced study beyond the entry-level credential with emphasis in such areas as research and clinical expertise.

There has been a "degree creep" in allied health. With the explosion of knowledge, diverse practice acts, etc., programs of study increasingly include requirements for higher-level degree programs. In some cases, the increased requirements are definitely needed; in other professions, they may be questionable.

Allied Health Faculty and Research Needs

There is a serious need for qualified faculty in allied health education. Faculty members are aging and few professionals are seeking education as a career choice.

There is a serious need for allied health professionals who can provide new scholarship and research in the allied health professions. There is a serious need for clinical researchers and researchers looking at clinical care outcomes.

The Allied Health "Regulatory" World

There are nine different specialized accrediting bodies that evaluate allied health programs. One of them, the Commission on Accreditation of Allied Health Education Programs, is an umbrella agency that is responsible for 18 different professions affecting 2,000 programs at 1,100 institutions. The nine accrediting agencies in allied health are:

- Accreditation Council for Occupational Therapy Education (ACOTE)
- Commission on Accreditation of Allied Health Education Programs (CAAHEP)
- Commission on Accreditation/Approval for Dietetics Education (CAADE) of the American Dietetic Association
- Commission on Dental Accreditation (CDA) of the American Dental Association
- Commission on Academic Accreditation (CAA) in Audiology and Speech-Language Pathology
- Commission on Accreditation in Physical Therapy Education (CAPTE)
- Joint Review Committee on Education in Radiologic Technology (JRCERT)
- Joint Review Committee on Educational Programs in Nuclear Medicine Technology (JRCNMT)
- National Accrediting Agency for Clinical Laboratory Sciences (NAACLS)

Educational programs have extremely limited flexibility in responding to changing market conditions due to the specific educational and curriculum requirements placed on them by accreditation agencies, university bureaucracies, and the Texas Higher Education Coordinating Board.

- Not all allied health professions require licensure for practice. Laws vary by state.
- State practice acts and scope of practice acts vary by state.
- Most allied health professions require successful completion of a national examination.
- Level of supervision by a physician, dentist, or other professional varies by state.
- Reciprocity to gain licensure from state to state is not always available.

The Allied Health Marketplace

The employers of allied health professionals include hospitals, clinics, laboratories, private offices and emergency medical systems.

Although allied health represents 60 percent of the health care workforce, very few federal dollars are targeted for allied health.

Some allied health professionals, are provide greater access to primary health care, such as the physician assistant, while others are employed in hospitals, clinics, home health agencies, long-term care facilities, schools, government agencies, military, etc.

Allied health professionals are increasingly accepting broader responsibilities in the workplace. Flexible career linkages across disciplines (multidisciplinary) are being designed and used in many patient care arenas.

Changes in reimbursement and Medicare policies have had a severe, negative impact on most allied health professions, especially speech, occupational, and physical therapy.

In efforts to contain costs, less well trained personnel at lower salaries are often replacing some allied health professionals. For example, Physical Therapist Assistants are replacing Physical Therapists, Medical Laboratory Technicians are replacing the Clinical Laboratory Scientists, and Nurse's Aides are replacing Respiratory Therapists.

Health Care Professions Error Management and Quality Improvement

Public attention has recently focused on the Institute of Medicine study, *To Err is Human*, which indicated the number of errors made by physicians and others in the health care industry. Following the IOM's recommendations, President Clinton is calling for a nation wide system of error reporting by all hospitals in the country.

In order to address error management and quality improvement in health care, however, a systems approach is needed. This requires a focus on the entire health care team and the recognition that error management efforts cannot be limited to physicians only. The entire team creates a "chain" of events that can lead to human error and it is

the "chain" of professionals who can prevent error and improve the quality of care. Examples are below:

- The Blood Bank Specialist or the Clinical Laboratory Scientist (allied health professionals) cross matches and determines safety and compatibility of blood for transfusion on the order of the physician. The blood is typed and labeled by the Blood Bank Specialist and secured by a nurse or another health care professional to deliver to the bedside. By far, the majority of errors occurring in this chain of events is clerical.
- A study at UTHSCSA to determine the value of laboratory tests to diagnose hypercoagulability (the tendency to make blood clots) found that one-third of the tests were ordered by the physician at the wrong time and the physician did not order the appropriate test in 88 percent of the cases. In only 25 percent of the cases where a patient had a deficiency was there documentation made in the record. This suggests the need for physicians to consult with Clinical Laboratory Scientists on which tests to use and when to administer them. The rapid development of new knowledge and new tests makes it impossible for the physician to be aware of all new changes and underlines the importance of working in teams and using the expertise of all health care professionals.

Research indicates that allied health professionals can significantly improve the quality of patient care while reducing the cost of care both to the patient and to the payer. Examples include:

- A study using Health Care Financing and Administration (HCFA) data show that Medicare beneficiaries treated by a Respiratory Therapist (RT) during their initial stay in a Skilled Nursing Facility had a 42 percent lower mortality rate at their next encounter with the Medicare system than a similar group of beneficiaries who received respiratory care from non-RT providers. The study indicated that RTs saved Medicare

approximately \$98 million in 1996. HCFA data point to shortened length of stay by 3.6 days when Medicare patients received respiratory care by RTs.

- Results of a six-year case study in a Georgia nursing home showed that after the introduction of the physician assistant, the number of annual hospital admissions fell by 38 percent and the total number of hospital days per 1000 patient years fell by 68.6 percent (from 4,170 in 1992 to 1,310 in 1997). The number of nursing home visits increased by 62 percent. Annual Medicare-allowed charges for MD and PA services increased by \$22,304, but were more than offset by a decline in hospital DRG reimbursements of \$96,043. The conclusion of the study was that introduction of regular visits to nursing home patients by a physician assistant can reduce hospitalization and medical costs of the frail elderly.
- Data from a Pediatric In-Home Asthma Disease Management Program at UTHSCSA resulted in significant reductions in school days missed, number and cost of physician office visits, emergency department visits, hospitalizations and Health Care Utilization Index.
- Another study published by UTHSCSA found that baccalaureate-degree respiratory therapy students are better prepared to identify and recommend appropriate treatment of lethal arrhythmias encountered in the clinical setting when compared with baccalaureate degree nursing students.
- A study to determine the appropriateness of basic respiratory care delivered at a 450-bed VA hospital during a three-month time interval found that, on average, 25 percent of basic procedures ordered were not indicated and about 12 percent of patients reviewed were not receiving care that was indicated. Inappropriate utilization of respiratory care services may

increase costs and produce undesirable outcomes in terms of morbidity, mortality, and length of stay.

- In a study entitled "Effectiveness of Manual Therapy and Exercise of Osteoarthritis of the Knee," published in *Annals of Internal Medicine*, researchers at Brooke Army Medical Center found that a combination of manual physical therapy and supervised exercise by physical therapists is more effective than no treatment in improving walking distance and decreasing pain, dysfunction, and stiffness in patients with osteoarthritis of the knee. Such treatment may also defer or decrease the need for surgical intervention.

Health Policy Needs

- There are no comprehensive educational and practice data sets on allied health.
- There are few health policy and health services researchers focused on allied health.
- There need to be changes in the regulation of allied health in the State of Texas, including licensure, scope of practice and university and state bureaucratic requirements.

Allied Health Professionals Employed in the State of Texas
1998 Texas State Occupational Employment and Wage Estimates
Texas Bureau of Labor Statistics

Professional, Paraprofessional and Technical Allied Health Occupations

(alphabetically listed)

Occupation	Number Employed in Texas
All Other Health Service Workers	18,100
All Other Therapists	5,040
Dental Assistants	15,340
Dental Hygienists	7,360
Dietetic Technicians	1,310
Dietitians and Nutritionists	2,410
Electroneurodiagnostic Technologists	270
Emergency Medical Technicians	7,810
Home Health Aides	43,000
Medical and Clinical Laboratory Technicians	9,370
Medical and Clinical Laboratory Technologists	10,410
Medical Assistants	19,420
Medical Records Technicians	5,820
Nuclear Medicine Technologists	830
Occupational Therapists	4,610
Occupational Therapy Assistants and Aides	910
Opticians, Dispensing and Measuring	4,200
Orderlies and Attendants	44,115
Other Health Diagnosing and Treating Practitioners	830
Paraprofessionals and Technicians	37,250
Pharmacy Technicians and Aides	13,080
Physical and Corrective Therapy Assistant and Aides	5,390
Physical Therapists	7,740
Physician Assistants	4,750
Radiation Therapists	810
Radiologic Technologists	8,850
Recreational Therapists	1,200
Respiratory Therapists	6,120
Speech-Language Pathologists and Audiologists	6,450
Surgical Technologists and Technicians	3,890
TOTAL	296,685

Allied Health Professionals Employed in the State of Texas
1998 Texas State Occupational Employment and Wage Estimates
Texas Bureau of Labor Statistics

Professional, Paraprofessional and Technical Allied Health Occupations

(in ascending number employed)

Occupation	Number Employed in Texas
Electroneurodiagnostic Technologists	270
Radiation Therapists	810
Nuclear Medicine Technologists	830
Other Health Diagnosing and Treating Practitioners	830
Occupational Therapy Assistants and Aides	910
Recreational Therapists	1,200
Dietetic Technicians	1,310
Dietitians and Nutritionists	2,410
Surgical Technologists and Technicians	3,890
Opticians, Dispensing and Measuring	4,200
Occupational Therapists	4,610
Physician Assistants	4,750
All Other Therapists	5,040
Physical and Corrective Therapy Assistant and Aides	5,390
Medical Records Technicians	5,820
Respiratory Therapists	6,120
Speech-Language Pathologists and Audiologists	6,450
Dental Hygienists	7,360
Physical Therapists	7,740
Emergency Medical Technicians	7,810
Radiologic Technologists	8,850
Medical and Clinical Laboratory Technicians	9,370
Medical and Clinical Laboratory Technologists	10,410
Pharmacy Technicians and Aides	13,080
Dental Assistants	15,340
All Other Health Service Workers	18,100
Medical Assistants	19,420
Paraprofessionals and Technicians	37,250
Home Health Aides	43,000
Orderlies and Attendants	44,115
TOTAL	296,685